

CLAIMS:

1. An image forming apparatus comprising:
 - a process unit capable of being removably mounted in an apparatus body;
 - a switching unit for switching the apparatus between a state to permit the mounting/dismounting of the process unit and a state to inhibit the mounting/dismounting of the process unit; and
 - a controller for controlling the switching unit,wherein the controller selectively executes a required one of:
 - an image forming mode to form an image by means of the process unit;
 - a first standby mode in which a switching operation by the switching unit is enabled while some of the parts of the apparatus, except for the switching unit, are deactivated; and
 - a second standby mode in which the switching unit is deactivated in addition to those deactivated in the first standby mode, thereby reducing power consumption from that of the first standby mode, andwherein the second standby mode is started when a predetermined length of time has passed from the start of the first standby mode.
2. An image forming apparatus according to Claim 1, further comprising a cover member which is free to be shifted between an open position and a close position with respect to the apparatus body and which, in the close position,

serves to restrict an operation of mounting/dismounting the process unit by a user,

wherein the controller starts the first standby mode when the cover member is opened during the execution of the image forming mode.

3. An image forming apparatus according to Claim 1, further comprising a power source for supplying power to the switching unit,

wherein the controller deactivates the power source in the second standby mode.

4. An image forming apparatus according to Claim 1, further comprising a development rotary capable of being mounted with a developer as the process unit and driven into rotation by a driver,

wherein the driver functions as the switching unit by selectively positioning the development rotary at a predetermined mounting/dismounting position defined in correspondence to the developer for permitting the mounting/dismounting of the developer, or at any other position.

5. An image forming apparatus according to Claim 1, further comprising a latent image carrier driver for rotating a latent image carrier in a predetermined direction, the latent image carrier capable of carrying an electrostatic latent image thereon,

wherein the controller disables the driving of the latent image carrier driver in the first standby mode.

6. An image forming apparatus according to Claim 1, further comprising an intermediate transfer member driver for driving an intermediate transfer member into rotation in a predetermined direction, the intermediate transfer member capable of temporarily carrying the image formed by means of the process unit during the image forming mode,

wherein the controller disables the driving of the intermediate transfer member driver in the first standby mode.

7. An image forming apparatus according to Claim 1, wherein the controller starts the second standby mode when a predetermined length of time has passed in a state where the apparatus executing the image forming mode is applied with no operation request from an external apparatus connected with the apparatus or from a user.

8. A control method of an image forming apparatus including a process unit capable of being removably mounted in an apparatus body; and a switching unit for switching the apparatus between a state to permit the mounting/dismounting of the process unit and a state to inhibit the mounting/dismounting of the process unit,

wherein an image forming mode to form an image by means of the process unit,

a first standby mode in which a switching operation by the switching unit is enabled while some of the parts of the apparatus, except for the switching unit,

are deactivated, or

a second standby mode in which the switching unit is deactivated in addition to those deactivated in the first standby mode, thereby reducing power consumption from that of the first standby mode, is selectively executed as required, and

wherein the second standby mode is started when a predetermined length of time has passed from the start of the first standby mode.

9. An image forming apparatus comprising:

a process unit capable of being removably mounted in an apparatus body;

a switching unit for switching the apparatus between a state to permit the mounting/dismounting of the process unit and a state to inhibit the mounting/dismounting of the process unit;

a cover member which is free to be shifted between an open position and a close position with respect to the apparatus body and which, in the close position, serves to restrict an operation of mounting/dismounting the process unit by a user; and

a controller capable of executing a power save mode by deactivating some parts, inclusive of the switching unit, of the apparatus, the power save mode in which the apparatus consumes less power than that consumed during an image forming operation,

wherein when the cover member is opened during the execution of the power save mode, the controller cancels the power save mode to shift the apparatus to a state to permit an operation of the switching unit.

10. An image forming apparatus according to Claim 9, further comprising a command input unit for accepting a process-unit mounting/dismounting command from the user,

wherein when the command input unit accepts the mounting/dismounting command input, the controller operates the switching unit to shift the apparatus to the state to permit the mounting/dismounting of the process unit.

11. An image forming apparatus according to Claim 10, wherein the command input unit is designed not to accept the command inputted by the user while the cover member is in the close position.

12. An image forming apparatus according to Claim 9, further comprising a power source for supplying power to the switching unit,

wherein the controller deactivates the power source in the power save mode.

13. An image forming apparatus according to Claim 9, further comprising a development rotary capable of being mounted with a developer as the process unit and driven into rotation by a driver,

wherein the driver functions as the switching unit by selectively

positioning the development rotary at a predetermined mounting/dismounting position defined in correspondence to the developer for permitting the mounting/dismounting of the developer, or at any other position.

14. An image forming apparatus according to Claim 9, wherein the controller starts the power save mode when a predetermined length of time has passed in a state where the apparatus is applied with no operation request from an external apparatus connected with the apparatus or from the user.

15. A control method of an image forming apparatus including: a process unit capable of being removably mounted in an apparatus body; a switching unit for switching the apparatus between a state to permit the mounting/dismounting of the process unit and a state to inhibit the mounting/dismounting of the process unit; and a cover member which is free to be shifted between an open position and a close position with respect to the apparatus body and which, in the close position, serves to restrict an operation of mounting/dismounting the process unit by a user,

wherein a power save mode in which the apparatus consumes less power than that consumed in an image forming operation is executed as required by deactivating some parts, inclusive of the switching unit, of the apparatus, and

wherein when the cover member is opened during the execution of the power save mode, the power save mode is cancelled to shift the apparatus to a state to permit an operation of the switching unit.

16. An image forming apparatus comprising:

a process unit capable of being removably mounted in an apparatus body;

a switching unit for switching the apparatus between a state to permit the mounting/dismounting of the process unit and a state to inhibit the mounting/dismounting of the process unit;

a cover member which is free to be shifted between an open position and a close position with respect to the apparatus body and which, in the close position, serves to restrict an operation of mounting/dismounting the process unit by a user; and

a controller for controlling the switching unit,

wherein in a case where the cover member is closed when the apparatus is in the state to permit the mounting/dismounting of the process unit, the controller executes a mounting/dismounting inhibition process in which the switching unit is controlled after the lapse of a predetermined start waiting time so as to shift the apparatus to the state to inhibit the mounting/dismounting of the process unit, and

wherein in a case where the mounting/dismounting of the process unit is undone before the closure of the cover member, the controller makes the start waiting time longer than that of a case where the mounting/dismounting of the process unit is done.

17. An image forming apparatus according to Claim 16, wherein the controller cancels the mounting/dismounting inhibition process when the cover member is opened during the start waiting time.

18. An image forming apparatus according to Claim 16, further comprising a detector for detecting a status change of the apparatus related to whether the mounting/dismounting of the process unit is done or not,

wherein the controller makes determination as to whether the mounting/dismounting of the process unit is done or not, based on a detection result given by the detector.

19. An image forming apparatus according to Claim 18, designed to permit the mounting/dismounting of the process unit via a mounting/dismounting opening formed in the apparatus body, and further comprising a restricting member which is free to be shifted between an open position and a close position with respect to the mounting/dismounting opening and which, in the close position, restricts the mounting/dismounting of the process unit,

wherein the detector is designed to detect the opening/closing of the restricting member, and

wherein based on the detection by the detector indicating that the restricting member once opened is closed again, the controller determines the mounting/dismounting of the process unit to be done.

20. An image forming apparatus according to Claim 19, wherein the

controller determines the mounting/dismounting of the process unit to be undone if a time period between the opening of the restricting member and the closing of the restricting member is not more than a predetermined length of time.

21. An image forming apparatus according to Claim 18, wherein the detector is designed to detect the opening/closing of the cover member, and

wherein the controller determines the mounting/dismounting of the process unit to be undone if a time period between the opening of the cover member and the closing of the cover member is not more than a predetermined length of time.

22. An image forming apparatus according to Claim 16, wherein the process unit includes a storage unit for storing information related to the unit, and

wherein the controller retrieves the information from the storage unit in the mounting/dismounting inhibition process executed after the mounting/dismounting of the process unit.

23. An image forming apparatus according to claim 16, further comprising a command input unit for accepting a process-unit mounting/dismounting command from the user, and

wherein when the command is inputted to the command input unit, the controller operates the switching unit to shift the apparatus to the state to permit the mounting/dismounting of the process unit.

24. An image forming apparatus according to Claim 16, further comprising a

development rotary capable of being mounted with a developer as the process unit and driven into rotation by a driver,

wherein the driver functions as the switching unit by selectively positioning the development rotary at a predetermined mounting/dismounting position defined in correspondence to the developer for permitting the mounting/dismounting of the developer or at any other position.

25. A control method of an image forming apparatus including: a process unit capable of being removably mounted in an apparatus body; a switching unit for switching the apparatus between a state to permit the mounting/dismounting of the process unit and a state to inhibit the mounting/dismounting of the process unit; and a cover member which is free to be shifted between an open position and a close position with respect to the apparatus body and which, in the close position, serves to restrict an operation of mounting/dismounting the process unit by a user,

wherein in a case where the cover member is closed when the apparatus is in the state to permit the mounting/dismounting of the process unit, a mounting/dismounting inhibition process is executed in which the switching unit is controlled after the lapse of a predetermined start waiting time so as to shift the apparatus to the state to inhibit the mounting/dismounting of the process unit, and

wherein in a case where the mounting/dismounting of the process unit is

undone before the closure of the cover member, the start waiting time is made longer than that of a case where the mounting/dismounting of the process unit is done.

26. An image forming apparatus comprising:

a process unit capable of being removably mounted in an apparatus body;

a controller controlling the individual parts of the apparatus for selectively executing one of the two or more operation modes including: an image forming mode to form an image according to an image forming request, and a first power save mode to deactivate some of the parts of the apparatus thereby reducing the power consumption of the apparatus from that of the image forming mode; and

a switching unit controlled by the controller for shifting the apparatus between a state to permit the process unit to be mounted in/dismounted from the apparatus body and a state to inhibit the mounting/dismounting of the process unit,

wherein the controller places the apparatus in a first mounting/dismounting permission state to permit the mounting/dismounting of the process unit when the mounting/dismounting of the process unit is performed during the execution of the image forming mode, whereas the controller places the apparatus in a second mounting/dismounting permission

state when the mounting/dismounting of the process unit is performed during the execution of the first power save mode, the second mounting/dismounting permission state in which some parts of the apparatus are deactivated in addition to those deactivated in the first mounting/dismounting permission state while the mounting/dismounting of the process unit is permitted.

27. An image forming apparatus according to Claim 26, wherein in a case where the mounting/dismounting of the process unit is not performed while the image forming mode or the first power save mode is in execution, the controller operates the switching unit to shift the apparatus to a mounting/dismounting inhibition state to inhibit the mounting/dismounting of the process unit.

28. An image forming apparatus according to Claim 26, wherein at completion of the mounting/dismounting of the process unit, the controller executes the operation mode immediately preceding the mounting/dismounting operation.

29. An image forming apparatus according to Claim 26, further comprising a cover member which is free to be shifted between an open position and a close position with respect to the apparatus body and which, in the close position, serves to restrict the mounting/dismounting of the process unit,

wherein the controller determines the mounting/dismounting of the process unit to be completed if the cover member is closed by a user when the apparatus is in the first or second mounting/dismounting permission state.

30. An image forming apparatus according to Claim 26, wherein in the first mounting/dismounting permission state, the controller deactivates some of those parts of the apparatus which are operative in the image forming mode.

31. An image forming apparatus according to Claim 26, wherein the controller deactivates the switching unit when the mounting/dismounting of the process unit is not performed during the execution of the first power save mode, and wherein the controller activates the switching unit when the mounting/dismounting of the process unit is performed, thereby shifting the apparatus to the second mounting/dismounting permission state.

32. An image forming apparatus according to Claim 27, further comprising a development rotary capable of being mounted with a plurality of developers as the process units storing toners therein and free to be rotated in a predetermined direction,

wherein the development rotary is designed to permit the mounting/dismounting of the process unit only when positioned and halted at a predetermined mounting/dismounting permission position, and

wherein in the first or second mounting/dismounting permission state, the controller positions the development rotary for setting the developer to the mounting/dismounting permission position, and wherein in the mounting/dismounting inhibition state, the controller positions the development rotary at any other position than the mounting/dismounting permission position.

33. An image forming apparatus according to Claim 26, further comprising a command input unit for accepting a process-unit mounting/dismounting command from a user,

wherein when the command input unit accepts the mounting/dismounting command input, the controller shifts the apparatus to the first or second mounting/dismounting permission state according to the current operation mode of the apparatus.

34. An image forming apparatus according to Claim 26, wherein the controller is further capable of executing a second power save mode as the operation mode by deactivating some parts of the apparatus in addition to those deactivated in the first power save mode, the second power save mode in which the power consumption is reduced from that of the first power save mode, and

wherein when the mounting/dismounting of the process unit is performed during the execution of the second power save mode, the controller shifts the apparatus to a third mounting/dismounting permission state in which some parts of the apparatus are deactivated in addition to those deactivated in the second mounting/dismounting permission state while the mounting/dismounting of the process unit is permitted.

35. A control method of an image forming apparatus including a process unit capable of being removably mounted in an apparatus body,

wherein one of the two or more operation modes is selectively executed,

the operation modes including: an image forming mode to form an image according to an image forming request, and a power save mode to deactivate some of the parts of the apparatus thereby reducing the power consumption of the apparatus from that of the image forming mode,

wherein when the mounting/dismounting of the process unit is performed during the execution of the image forming mode, the apparatus is placed in a first mounting/dismounting permission state to permit the mounting/dismounting of the process unit, and

wherein when the mounting/dismounting of the process unit is performed during the execution of the power save mode, the apparatus is placed in a second mounting/dismounting permission state in which some parts of the apparatus are deactivated in addition to those deactivated in the first mounting/dismounting permission state.